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## A NEW SPECIES OF DOWNINGIA

JOHN H. WEILER

A systematic study of the genus *Downingia* now in progress has revealed a new entity heretofore included by all workers in *D. elegans* (Dougl. ex Lindl.) Torr. Investigation of plants in the field and in cultivation suggests that this new entity should be accorded specific recognition. The new species I have chosen to name for Dr. Rimo Bacigalupi, Curator of the Jepson Herbarium, who has stimulated my interest in *Downingia* and given me a great deal of time and valuable advice.

***Downingia Bacigalupii* sp. nov.** Planta annua caulibus simplicibus vel e basibus ramosis, 0.5-3.0 dm. altis; foliis bracteisque linearibus vel lanceolatis; lobis calycis adscendentibus vel rotatis, quam sinibus lateraliibus tubi corollae longioribus; corollis caesiis lineis conspicuis azureis reticulato-venosis, labio inferiore concavo, labium superiore longitudine aequante vel quam id paulo longiore, centraliter albo haud venoso maculis

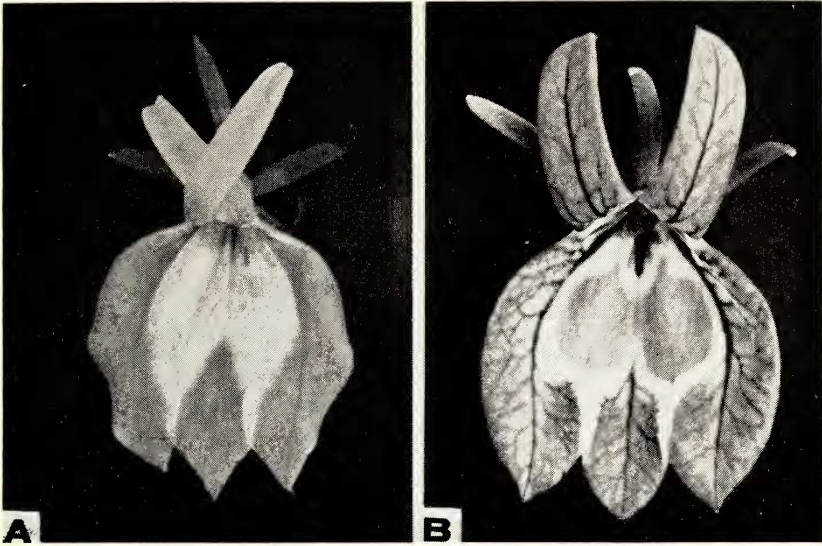


FIG. 1. Perianths of *D. elegans* (A) and *D. Bacigalupii* (B) showing differences in color patterns and conformation of the corollas,  $\times 3$ .

duabus flavis plerumque ovalibus in medio areae albae obsito; corollae tubo brevissimo latissimoque; lobis labii superioris cuneato-lanceolatis, divergentibus, erectis vel recurvatis; tubo staminali quam corollae tubo valde longiore, proorse curvato, antheris inferioribus duabus apice setigeris; ovario uniloculari, placentis parietalibus duabus; seminis ellipticis angustis striis plus minusve parallelibus obsitis.

There are similarities between *D. elegans* and *D. Bacigalupii* which make it difficult to differentiate the two on herbarium sheets. Both have widely opened corolla-tubes with the sides of the tube forming approximately a 90-degree angle, and both have a long exerted staminal column with a sharply curved anther-tube. It is the combination of these two characters easily seen on mounted specimens which causes people to confuse the two.

When living plants are compared, the most striking differences between plants of the two species are in the colors of the corolla. Corollas of *D. elegans* are a smooth, bright blue, with the lower lip having a central bilobed white spot. This white area is sometimes veined with blue reticulations or may even be completely suffused with blue. In contrast, the corolla of the new species is a lavender-blue, usually with prominent, more deeply colored veins, especially noticeable on the lower corolla-lobes. The lower lip of the corolla has a central white area which is devoid of blue veins and contains two bright orange-yellow spots. Other differences neither as consistent nor as easy to recognize, are size and shape of corolla-lobes. Lobes of the upper corolla-lip of *D. elegans* are narrow, usually

parallel or crossed over each other but occasionally divergent, and sharply reflexed. The lobes of the lower corolla lip are cuneate and tapered to a point. In *D. Bacigalupii*, the upper lobes are broader, widely divergent, and erect or arched backward, but not so prominently as in *D. elegans*. The lobes of the lower lip are broader, rounded, and abruptly pointed. Besides morphological differences, the gametic chromosome number of *D. Bacigalupii*, including plants of the type collection, is  $n=12$ , whereas that of *D. elegans* is  $n=10$ .

*Downingia Bacigalupii* occurs from southwestern Idaho westward across southern Oregon, as far north as southern Wasco County east of the Cascade Mountains, and in northeastern California as far south as Lake Tahoe. This range overlaps that of *D. elegans* only in southern Wasco County, Oregon. *D. Bacigalupii* grows in vernal pools, roadside ditches, open areas of mountain meadows and in muddy margins of lakes at sites exposed to bright sunlight.

Type. In heavy soil of a large bowl-shaped depression littered with rocks, 2.7 miles southwest of the California-Oregon border along Ager-Beswick road, Siskiyou County, California, June 24, 1960, *J. H. Weiler* and *A. P. Nelson 60205* (UC-1,199,666).

Other collections. CALIFORNIA. Sierra County: 1 mile south of junction to Calpine, *Bacigalupi 4276*. Plumas County: 11.7 miles north of Sattley, Sierra Valley, *Weiler 59190*. Lassen County: 11.1 miles south of Eagle Lake, *Weiler 59203*. Shasta County: Dickson Flat 3.2 miles south of Shasta-Siskiyou County line, *Weiler 60194*. Modoc County: Pitt River Valley south of Alturas, *Mason & Grant 13414*. OREGON. Josephine County: 3.7 miles north of O'Brien, *Weiler 61319*. Jackson County: 1.5 miles east of Klamath Falls Junction, *Weiler 60177*. Klamath County: Modoc Point, Klamath Lake, *Constance 9682*. Wasco County: 0.9 miles north of Schoolie Ranger Station road on the road to Mount Wilson, *Weiler 61397*. Harney County: 1.2 miles west of Riley, *Weiler 61345*. IDAHO. Owyhee County: 10 miles south of Riddle, *Holmgren 7976*.

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### THREE NEW SPECIES RELATED TO MALACOTHRIX CLEVELANDII<sup>1</sup>

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*Malacothrix clevelandii* A. Gray, a cichoriaceous composite of the southwestern United States and northwestern Mexico, has been regarded as a homogeneous species by all previous authors, including the most recent monographer of the genus, E. W. Williams (Am. Midl. Nat. 58:494-512. 1957). Stebbins *et al.* (Univ. Calif. Publ. Bot. 26:401-430. 1953) reported the gametic chromosome number  $n=7$  for a population of this species from coastal California, whereas the plants they examined from

<sup>1</sup> The authors are indebted to Professors Carl C. Epling, Harlan Lewis, and Henry J. Thompson for their constructive criticism of the manuscript.